WHAT IS CLAIMED IS:

1. A soft bandwidth service infrastructure coupled with an existing network infrastructure for carrying soft bandwidth traffic across the network, comprising:

means for defining one or more soft bandwidth segments between predetermined points on the existing network infrastructure;

means for integrating the soft bandwidth segments to establish one or more virtual backbone tunnels coupled with the existing network infrastructure; and

means for transmitting data traffic across the network such that soft bandwidth traffic is carried across the one or more virtual backbone tunnels and routine network data traffic is carried across the existing network infrastructure.

2. The infrastructure of Claim 1, wherein the existing network infrastructure is a Fiber-optic IP backbone network.

3. The infrastructure of Claim 2, wherein the existing network infrastructure includes a plurality of core network routers interconnecting a plurality of facility stations, and a plurality of exchange routers for enabling access to the existing network infrastructure and for aggregating data traffic to respective core routers within the network infrastructure.

4. The infrastructure of Claim 3, wherein one or more service providers are connected with the network infrastructure via respective ones of the exchange routers.

5. The infrastructure of Claim 3, wherein the soft bandwidth segments are defined between respective exchange routers in the existing network infrastructure.

6. The infrastructure of Claim 5, wherein respective exchange routers operate as ingress and egress label switched routers for routing soft bandwidth traffic across the one or more virtual backbone tunnels defined between them.

7. The infrastructure of Claim 6, wherein the core routers associated with the one or more virtual backbone tunnels operate as label switched routers for routing the soft bandwidth traffic across the virtual backbone tunnels.

8. The infrastructure of Claim 2, wherein the Fiber-optic IP backbone network runs an interior gateway protocol for routing data traffic within the network, and an internal border gateway protocol for external data traffic routing.

9. The infrastructure of Claim 8, wherein the interior gateway protocol is Open Shortest Path First (OSPF).

10. The infrastructure of Claim 8, wherein the interior gateway protocol is Intermediate System - Intermediate System (IS - IS).

11. The infrastructure of Claim 1, wherein the defining means utilizes Multiprotocol Label Switching (MPLS) to define the soft bandwidth segments.

12. The infrastructure of Claim 1, wherein the virtual backbone tunnels are MPLS tunnels coupled with the existing network infrastructure.

13. The infrastructure of Claim 12, wherein the virtual backbone tunnels are established across the existing network infrastructure using an MPLS signaling protocol.

14. The infrastructure of Claim 13, wherein the MPLS signaling protocol is Resource ReserVation Setup (RSVP).

15. The infrastructure of Claim 1, wherein the virtual backbone tunnels are managed according to the Lightweight Directory Access Protocol (LDAP).

16. A system for establishing virtual backbone tunnels coupled with an existing network infrastructure to carry soft bandwidth traffic, comprising:

a traffic matrix collector for maintaining network bandwidth traffic information;

a route optimizer for determining soft bandwidth availability within the network and for determining an explicit soft bandwidth traffic path across the network in accordance with the network bandwidth traffic information;

a network information database for maintaining updated soft bandwidth network configuration information relating to the determined soft bandwidth path;

means for informing particular components of the network infrastructure of the soft bandwidth network configuration information; and

means for establishing one or more virtual backbone tunnels across predetermined points in the network in accordance with the soft bandwidth network configuration information.

17. The system of Claim 16, wherein a database is associated with the route optimizer and includes point-to-point bandwidth demand information relating to the network and updated network equipment and connection inventory information.

18. The system of Claim 17, wherein in response to soft bandwidth allocation demands the route optimizer determines a set of user-specific virtual backbone tunnels across the network in accordance with the point-to-point bandwidth information and updated network equipment and connection inventory information to satisfy the demands.

19. The system of Claim 16, wherein the route optimizer utilizes the Floyd-Warshall shortest path algorithm to calculate an optimal soft bandwidth traffic path across the network.

20. The system of Claim 16, wherein the network information database is an LDAP database.

21. The system of Claim 16, further comprising an order entry module for receiving soft bandwidth service requests by users of the network.

22. The system of Claim 21, wherein the soft bandwidth service requests indicate particular soft bandwidth attributes.

23. The system of Claim 22, wherein the soft bandwidth attributes include any of bandwidth allocation information, timing information, quality of service information, restorability information, and priority and preemption information.

24. The system of Claim 21, further comprising a tunnel monitor for monitoring operation of the one or more virtual backbone tunnels in the network.

25. A method for transmitting data packets across a virtual backbone tunnel coupled with an existing network infrastructure, comprising the steps of:

determining a soft bandwidth traffic path across the existing network infrastructure;

establishing a virtual backbone tunnel between predetermined points in the existing network infrastructure defining the soft bandwidth traffic path across the existing network infrastructure;

assigning an identifier label to data packets entering the virtual backbone; and

transmitting the data packets across the virtual backbone in accordance with the identifier label.

26. The method of Claim 25, wherein the identifier indicates any of routing information, address information, application information, and service information.

27. The method of Claim 26, wherein the routing information includes any of destination information, bandwidth information, and timing information.

28. The method of Claim 25, wherein outgoing identifier labels are associated with the data packets.

29. A method for establishing a virtual backbone tunnel coupled with an existing network infrastructure, comprising the steps of:

receiving a request for a soft bandwidth service, the request indicating particular soft bandwidth attribute information;

determining soft bandwidth availability within the network;

determining an explicit soft bandwidth traffic path within the network;

informing particular components of the network infrastructure of the soft bandwidth traffic path information;

signaling the network to establish a virtual backbone tunnel between predetermined points in the existing network infrastructure indicated by the soft bandwidth traffic path information; and

transmitting soft bandwidth data traffic relating to the requested soft bandwidth service across the virtual backbone tunnel.

30. The method of Claim 29, wherein the soft bandwidth attribute information includes any of bandwidth allocation information, timing information, quality of service information, restorability information, and priority and preemption information.

31. The method of Claim 29, wherein explicit soft bandwidth traffic path information is stored in a network information directory, and wherein a network exchange router retrieves the soft bandwidth traffic path information from the network information directory.

32. The method of Claim 29, wherein the signaling is performed by encoding label information into an IP packet header at an ingress network exchange router and passing the label information to core network routers in accordance with the MPLS protocol.